

Future DNCT Simulation Work
Draft
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[This is just a rough draft to get the ball rolling. I would like to get suggested changes asap so I can incorporate them into another, better draft. I am targeting this draft on simulations we might run between now and the end of the year. If we need a different timescale, let me know. I have tried to break this paper down into specific issue areas that we can build upon in creating specific simulations. Not all of these topics require a full fledged game. Some might be post processed.]

High priority EWA simulation topics:

- Sharing formulae for export capacity at Banks.
- Simulation of possible major new assets not yet gamed.
 - Assume b(2) converted into EWA water.
 - Large volumes of wet year efficiency water.¹
- Greater emphasis on use of EWA for upstream flow/ storage/ temperature improvement.
 - Explicitly shoot for ERP targets?
 - For b(2) game, include anadromous doubling as a goal
- Use water user demand estimates
- Develop and game a baseline satisfying user demand estimates
 - Publicly funded efficiency, transfers for users?
 - Relax X2 and share water generated?
- Incorporate water quality considerations into EWA decisionmaking?
 - Develop an incentive structure – pay money to EWA for reduced mass loading of TOC, salt. Assess EWA penalties for increased mass loading?

Proposed simulation methods/ assumptions

- Run 1981 – 1995
- Run 1999
- Pre process games using a subcommittee. The subcommittee would make an initial pass at the operational decisions. The full group would then review and refine the operational plan.
- Perform sensitivity analysis using related games already run. If biological constraints are properly inserted into the daily model, then modest changes in the base assumptions could be run on the computer and fine tuned by the DNCT without the need for a new game run. For example, a variety of different export sharing functions could be run off of a single game. The main resulting difference would be in the pattern of EWA asset development and expenditures. Promising scenarios could become the subject of new gaming.
- Build complex games using related, but simpler games as baselines. The baseline for each DNCT game should be the most closely related game. There will rarely be any need to begin from scratch, once a particular year has been run once.
- Post process to develop additional insights. For example:
 - Study remaining availability of surplus capacity for markets
 - Analyze use of tools in multiple dimensions (tools are used to provide water, provide collateral, provide funds in the case of water sales.

¹ My concept on efficiency is that CALFED would help fund new urban efficiency measures. Water users would get the dry year from the measures and the EWA would get wet year credit. E.g., CALFED funds 100 kaf/year of water reclamation. Water users get the water during dry years. This water goes toward meeting the 400 kaf increase proposed by water users. In wet years, the EWA gets the water. Both sides win. The EWA gets water during the years it is most stressed. The users get water during the years when the 400 kaf target is most difficult to reach. We should be able to game this division.

Needed model upgrades

- Daily model outputs should include all values of interest, including water purchases, EWA storage, EWA funding and expenditures.
- The Daily model must be able to handle treating b(2) as part of the EWA. In particular must calculate federal share of cost of Accord standards each year (or we may use CALSIM to define this number). Also, must keep running account of expenditure of b(2) water.
- Add a routine to the daily model to routinely calculate excess capacity usable in a market.

Proposed Gaming Sequence

The intent is to run these games in a higher efficiency mode with prescreening of each game using a subcommittee. Also, each game becomes the foundation for later games. Finally, each game can be further post processed for sensitivity to relatively small changes in parameters.

- 6) Run the years 1981 – 1995 for beginning of Stage 1. Game 4 as previously defined with the following changes:
 - a) User defined demand targets
 - b) EWA share of expanded Banks
 - c) Robust upstream actions (i.e., upstream actions that are not likely to be sensitive to changes in game assumptions)
- 7) Same as 6) a) but b(2) is incorporated into EWA using rules articulated in DOI proposal
- 8) Same as Game 7, but
 - a) Add extra efficiency water to improve user and EWA water supplies
 - b) Maximize upstream benefits
 - c) Incorporate water quality feedbacks into decisionmaking
- 9) Same as Game 8, but now use end-of-Stage 1 assets.
- 10) Same as Game 9, but now meet water user demands in all years
 - a) Increase efficiency sharing and/or
 - b) Share relaxation of X2 standard during lower flow conditions.